



# IDAHO OIL AND GAS CONSERVATION COMMISSION

## Application For Permit to Drill, Deepen or Plug Back

APPLICATION TO: Drill (\$2,000) ☒ Deepen (\$500) ☐ Plug Back (\$500) ☐

NAME OF COMPANY OR OPERATOR: ALTA MESA SERVICES, LP Date: 04-30-2013

Address: 15021 KATY FRWY., SUITE 400

City: HOUSTON State: TX Zip Code: 77094 Telephone: 281-530-0991

Contact Name: RONDA LOUDERMAN Email Address: rlouderman@altamesa.net

### DESCRIPTION OF WELL AND LEASE

Name of Lease: Smoke Ranch LLLP Well Number: 1-21 Elevation (ground) GL2178.02' / RKB 20'

Well Location: Section: 21 Township: 8N Range: 4W (or block and survey)

(give footage from Section lines): BH - 77.3' TH - 268.5'

Field and Reservoir (if wildcat, so state): Willow County: Payette

Distance, in miles, and direction from nearest town or post office: 3.08 miles

Nearest distance from proposed location to property or lease line: 325.6' feet

Distance from proposed location to nearest drilling, completed or applied for on the same lease: N/A feet

Proposed depth: 5899' Rotary or cable tools: Rotary

Planned logging tools: \_\_\_\_\_

Approx date work will start: May 25, 2013 Number of acres in lease(s): 640

Number of wells on lease, including this well, completed in or drilling to this reservoir: 1

If lease purchased with one or more wells drilled, complete the following information:

Purchased from (name) N/A

Address of above \_\_\_\_\_

Status of bond \_\_\_\_\_

Remarks: (If this is an application to deepen or plug back, briefly describe work to be done, giving present producing zone and expected new producing zone) N/A

**CERTIFICATE:** I, the undersigned, state that I am the Regulatory Coordinator of Alta Mesa Services, LP (company) and that I am authorized by said company to make this application and that this application was prepared under my supervision and direction and that the facts stated herein are true, correct and complete to the best of my knowledge.

Date: 04-30-2013

Signature: Ronda Louderman

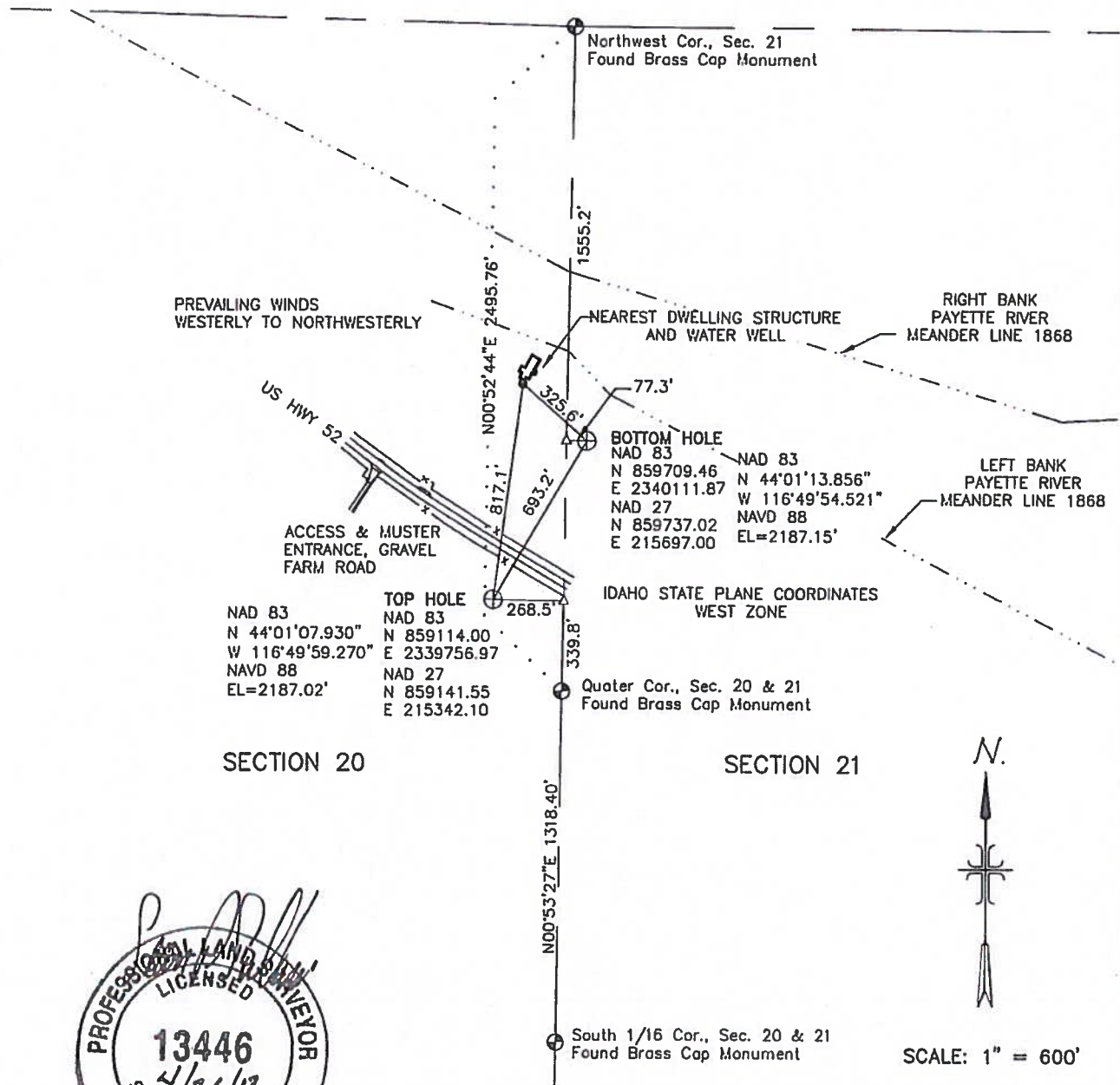
Permit Number: \_\_\_\_\_ Approval Date: \_\_\_\_\_ Approved by: \_\_\_\_\_

API Number: \_\_\_\_\_

**NOTICE:** Before sending in this form, be sure that you have given all information requested. See instructions on back.

# EXHIBIT MAP OF SMOKE RANCH LLLP 1-21

Lying in a Portions of the Section 20 & 21,  
Township 8 North, Range 4 West of the  
Boise Meridian, Payette County, Idaho  
2013



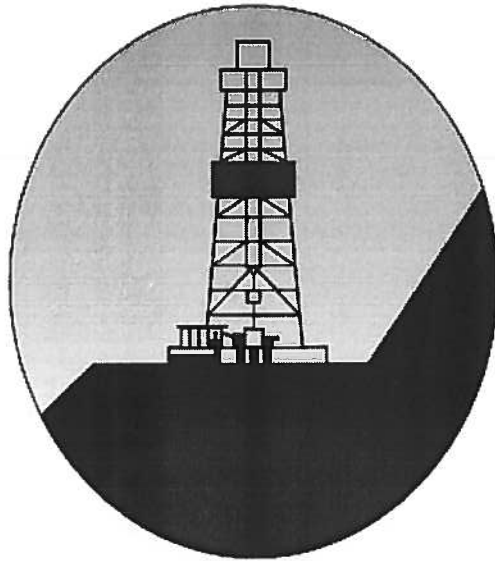
DATE: April 26, 2013

FILE: 0165-01 SMOKE RANCH LLLP 1-21.dwg



*Surveyors • Planners*  
1103 West Main Street  
Middleton, Idaho  
208-585-5858





**ALTA MESA**

**ALTA MESA SERVICES, LP**

**IDL Permit Supplement**

**Smoke Ranch LLLP 1-21**

**Willow**

**Payette County, ID**

**April 29, 2013**



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## 1 Background Information

**Objective:** The objective of this operation is to drill a directional well to develop the "1-15 Sand" within the

<b>AFE #:</b>		<b>County:</b>	Payette
<b>Well Type:</b>	Directional	<b>State:</b>	Idaho
<b>Well Name:</b>	Smoke Ranch LLLP 1-21	<b>Section:</b>	21
<b>Field:</b>	Willow	<b>Township:</b>	8N
		<b>Range:</b>	4W

### Mapping Reference:

<b>System:</b>	NAD83 / NAD27	<b>Mag Dec:</b>	-2.367° (15-Aug-2012)
<b>Zone:</b>	UTM11	<b>Grid Conv:</b>	0.167°
<b>SPCS:</b>	Idaho West Zone 1103	<b>Total Corr:</b>	-2.534°

### Coordinates:

#### Surface Location:

##### NAD83

**Lat:** N 44° 01' 07.930" (44.01887°)  
**Long:** W 116° 49' 59.270" (116.83313°)  
**SPCS:** 2339756.97 ft E  
859114.00 ft N

##### NAD27

**SPCS:** 215342.10 ft E  
859141.55 ft N

#### Bottom Hole Location:

##### NAD83

**Lat:** N 44° 01' 13.856" (44.02052°)  
**Long:** W 116° 49' 54.521" (116.83181°)  
**SPCS:** 2340111.87 ft E  
859709.46 ft N

##### NAD27

**SPCS:** 215697.00 ft E  
859737.02 ft N

### Elevation:

**GL:** 2187.02 ft  
**RKB:** 20 ft

### Planned TD:

**MD:** 5899.0 ft  
**TVD:** 5820.0 ft

### Operator #:

**Field #:** Willow  
**District:**

### Issue Date:

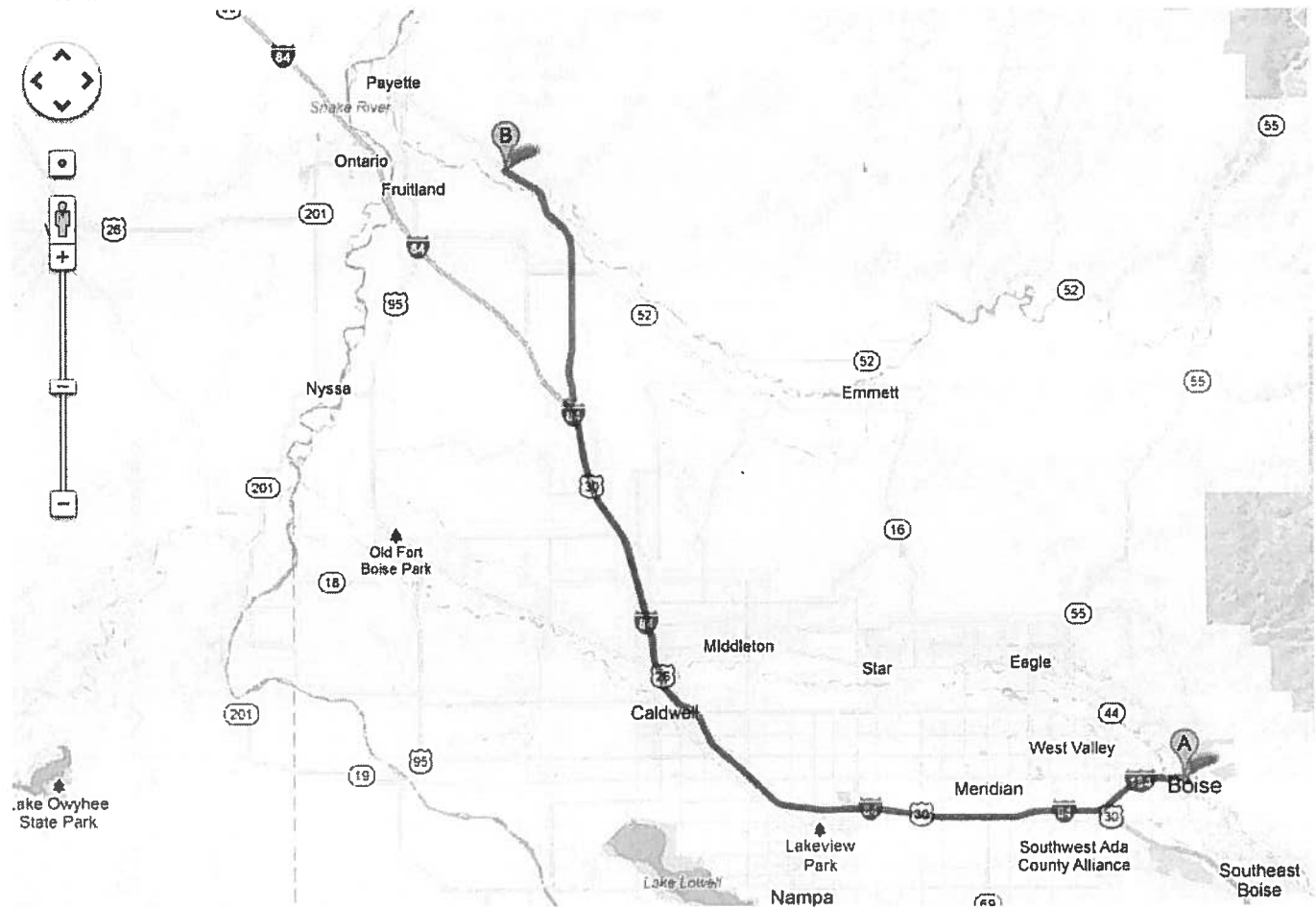
**API #:**  
**Permit #:**

### Contractor:

### Rig:

**Directions:**

From Boise, take Interstate 84 West. Go 36.6 miles and take Exit 13 toward Black Canyon Junction. Go 0.2 miles and turn right onto Black Canyon Exit. Go 0.4 miles and turn left onto Sand Hollow Road. Go 5.8 miles and continue straight onto State Highway 52 West. Go 6.0 miles and location entrance will be on the left.



## 2 Geologic Prognosis

### 2.1 Prospect

The sand to be tested is equivalent to the DJS 1-15, which is found in the Bridge DJS 1-15 Well at 3750' TVD. It is estimated that the target sand will be encountered at +/- 4500' TVD in the Prospect

### 2.2 PROPOSED WELL:

The well is to be directionally drilled to a measured depth of 5897' (5800' TVD). The Surface location being in Section 20-8N-4W and the Bottom hole location in Section 21-8N-4W (Payette County, Idaho).

### 2.3 POTENTIAL DRILLING HAZARDS:

- **Shallow Gas**

There is the potential to encounter shallow gas in this well at multiple depths. The Hamilton sand (1830' MD) and the OSS Sand (2065' MD) have had gas shows throughout the basin.

Well Name	Offset Distance	Depth Gas Found	Comparable Depth/Formations in SR 1-21	Comments
Virgil Johnson #1	2.2 miles SE	1410'-1610' MD	1800'-2000' MD / Hamilton / OSS Sand	Caused Blowout – Tools, Sand, and Shale ejected from well.
Tracy Trust 3-2	4.0 miles SE	1590' MD, 1722'-1800' MD, 2000' – 2200' MD	1700'-2000' MD / Espino / Hamilton / OSS Sand	Small Gas Shows in each of sands.
Interstate Finance #1	3.0 Miles NW	1267' MD	1800' Hamilton Sand	Loose Sand – Well Flowed for 3 hours before being controlled and killed.

- **Ash beds**

Mud logs of several wells in the Willow field area describe zones of shales that contain bentonite. Bentonite is a clay, generally formed by the weathering of volcanic ash, and it tends to expand a great deal as it absorbs fluid. The Bridge ML 1-10, approximately 2.5 miles NE of the prospect, experienced a zone of shale that included bentonite approximately 400' thick at depths of +/- 3250' – 3650' MD. The drilling report states that they experienced a noticeable drop in ROP and upon pulling the bit out of the hole they found the bit to be balled solid with sticky, mushy clay. Correlation between the wells estimates that the Bentonitic shale may also be found at depths of +/- 3700' – 4400' MD in the prospect well.



## 2.4 Estimated Geological Formation Tops

		Est. Tops are +/- 300'			Correlation Wells		
		Alta Mesa	Alta Mesa	Alta Mesa	Bridge	Bridge	Bridge
		SR 1-21	SR # 1-21	SR #1-21	DJS 1-15	ML- 1-10	DJS 1-14
Formation Tops	Comments	Est. MD	Est. TVD	Est. SS	MD	MD	MD
Hamilton Sand		1830'	1810'	400	1410'	993'	1522'
OSS Sand		2065'	2040'	170	1870'	1400'	2038'
Lacustrine Shale Top		2281'	2250'	-40	2248'	1,760	2138'
Marker 3		2854'	2806'	-596	2490'	2036'	2630'
Pink Fault (P)		4405'	4325'	-2,115			
DJS 1-15 Sand		4580'	4500'	-2,290	3750'	3700'	4040'
Top Basalt		5215'	5135'	-2,925	4694'	6040'	4550'

### 3 Site Preparation

#### 3.1 Access Roads

Being removed from the highway, a ~450' roadbed, 30' wide, will be constructed. Drive-up access to the wellhead and a 150' x 150' workover pad will be permatized. The remainder of the drill pad will be constructed for temporary use. The location will be leveled to grade with wooden mats used for surface stability.

#### 3.2 Erosion Control

Appropriate grading, mechanical and chemical stabilization (soil cement), and silt fencing will be used to prevent soil erosion.

#### 3.3 Cellars

An 8' deep round cellar box will be installed after the conductor is installed per the relevant section below.

#### 3.4 Pit System

A closed-loop circulating system will be used for this well from spud. Zero discharge practices will be implemented, and all cuttings and waste fluid will be solidified and disposed of at an approved facility.

#### 3.5 Sump

The location will have a 2' deep trench on all sides where the spoil from that trench will be used to construct an earthen berm around the location. The trench will act as a sump to collect rain and wash water for controlled release or appropriate disposal as required.



## 4 Well Construction

### 4.1 Wellbore Schematic

REV 1.0

Prepared by: Alexis Husser

April 26<sup>th</sup>, 2013

Alta Mesa Services, LP

Willow Field – Choctaw County, AL

Smoke Ranch LLLP 1-21 – Proposed Wellbore Schematic

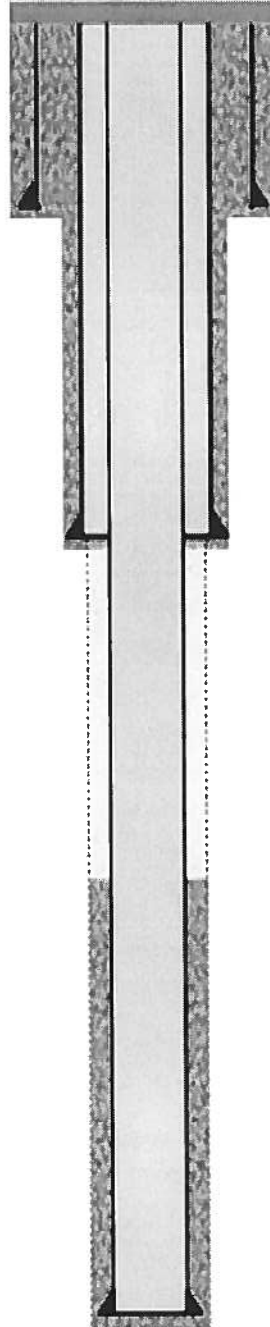
Depth Reference: Drill Floor

Drill Floor above GL: 20'

GL Elevation above MSL: 2192.0'

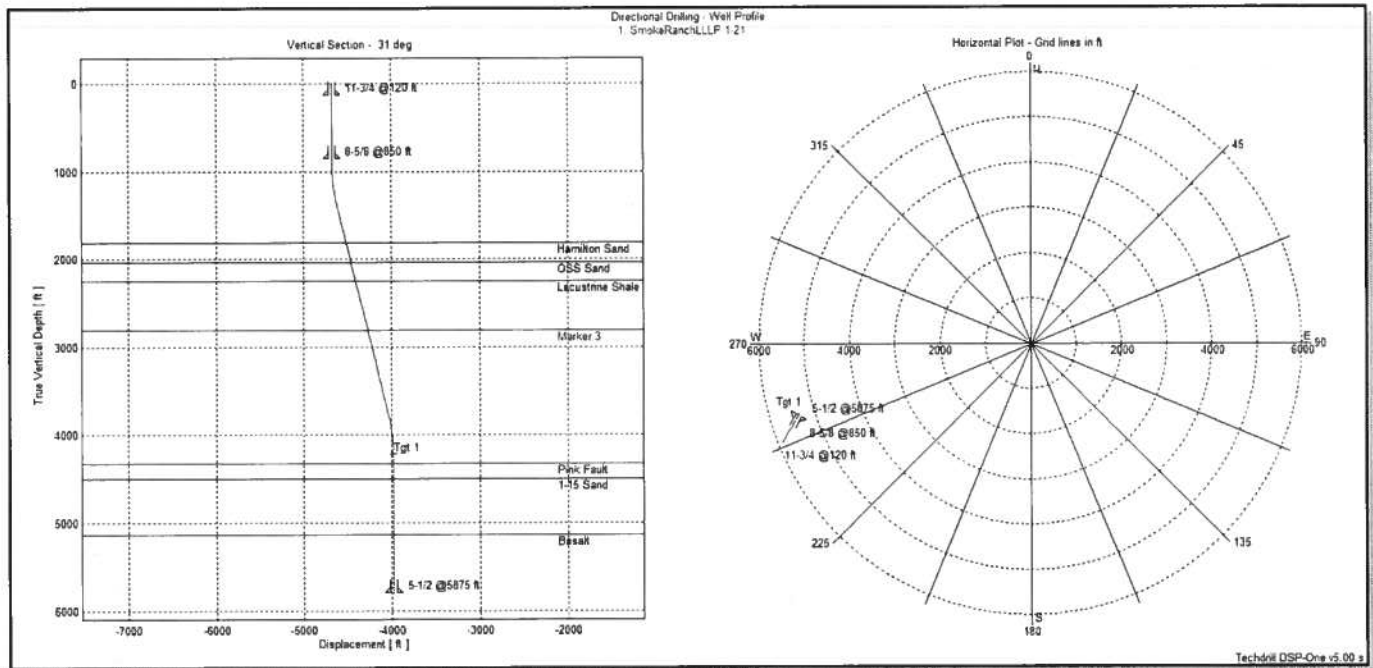
Bit & Directional	Evaluation	PP / FG
		PPG
17.5" Auger Vertical	None	8.4/9.2
10-5/8" Milled Tooth Vertical	None	
Drilled To: 850'/850'		8.4/11.1
7-7/8" PDC w/ PDM KOP @ 900' MD	MWD: Mud Pulse	
Build 3"/100' from 900' to 13.71" INC @ 30.79° AZI @ 1377' MD / 1372' TVD		
Hold to 3842' MD / 3767' TVD		
Drop 3"/100' from 13.71" INC @ 30.79° AZI to 0° @ 4299' MD / 4220' TVD	WL: GR, SP Induction Res Density, Por	
		8.9 / 16.9

Conductor Cut: 48" Below GL



Drilling Fluid	Casing	Cement
Dry	13-5/8" Conductor 120' / 120'	Grout
Spud Mud 8.5-9.0 ppg	8 5/8" 32.0# K-55 STC Set @: 850' / 850'	Class A 13.5 ppg Return to Surface Class A 15.8 ppg TOC @ 650'
8.5		
Fresh Water Polymer		
	5 1/2" 15.5# K-55 LTC Set @: 5,899' / 5,899'	Class D 13.5 ppg Return to Surface Class D 15.8 ppg TOC @ 4,000'
9.8		

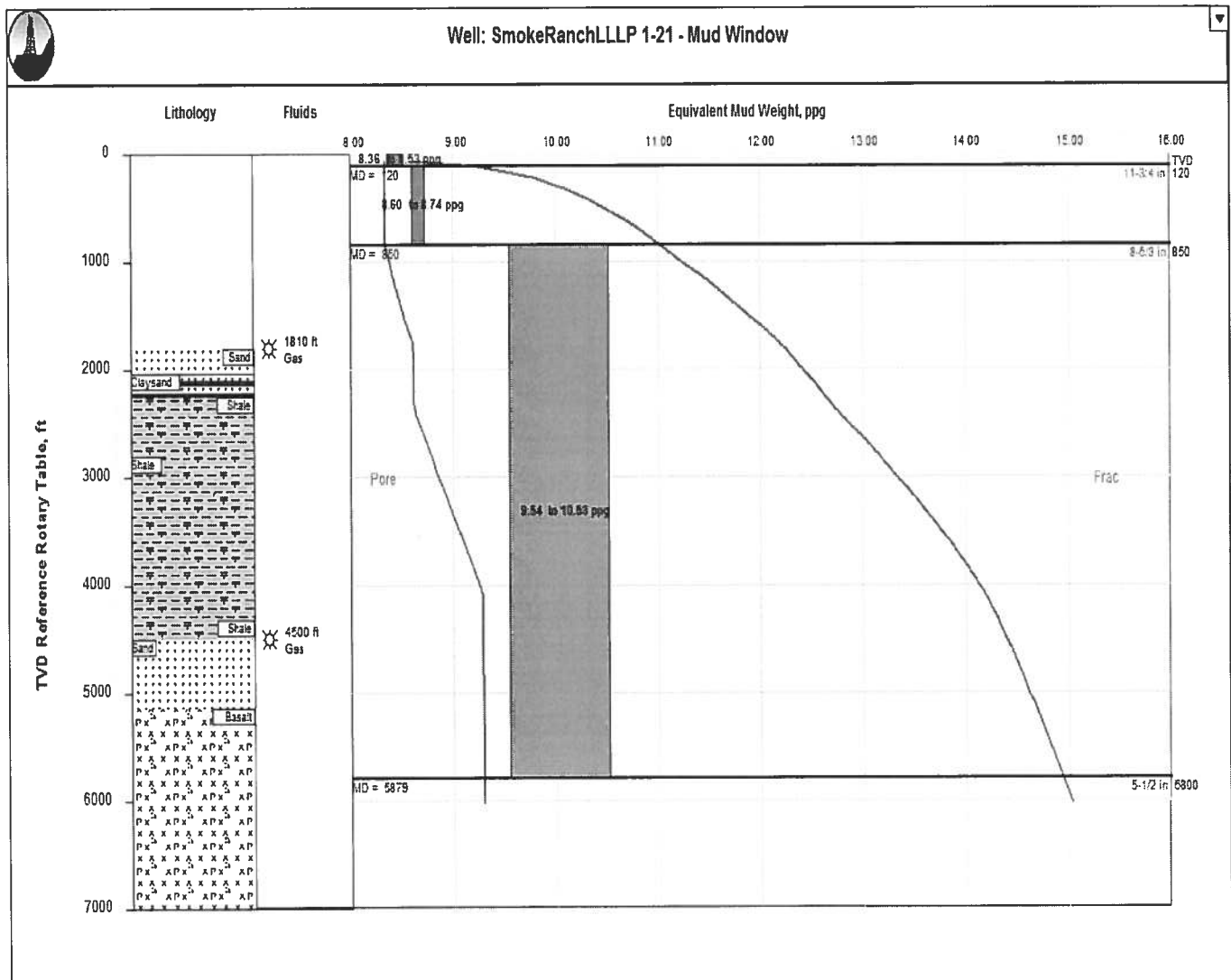
## 4.2 Directional Plan



### 4.3 Pore Pressure and Formation Integrity

Normal pressures are anticipated through the surface hole, with a slight pressure ramp through the production hole to 9.29 PPG equivalent in the 1-15 Sand.

The fracture gradient is calculated using Eaton & Eaton (1998) modeled for Gulf Coast formations.



## 4.4 Blow-Out Preventers

### 4.4.1 BOP Hardware Configuration

BOP Stack configuration includes an annular preventer and double ram preventers. The top most ram preventer will be fitted with variable ram blocks, the lower ram preventer will be fitted with blind ram blocks. A full-opening safety valve, inside BOP, and functioning wrench – *specific to the pipe in use and only those specific to the pipe in use* – are to be kept on the rig floor with easy access at all times.

### 4.4.2 BOP Testing

Test annular, rams, choke manifold, FOSV, and IBOP when BOP is first nipped up on casing head. Low-pressure test to 250psi and high-pressure test to 5,00psi (100% of 5M wellhead), except for annular. Test annular preventer to 3,500psi (70% of 5,000psi rating). Test the kelly hose and standpipe back to pump isolation valves to 200 psi above pop off setting or minimum of 5,000 psi. All tests must hold for five minutes. Retest specific component each time a seal is broken. Work BOP's and flush choke lines each trip. Tighten BOP and wellhead bolts every 3 days. Non-ported float valves to be used in BHA after surface casing set.

During drilling and completion operations, the ram-type blow-out preventer shall be function tested by closing on the drill pipe once every seven (7) days. Independently powered accumulators or accumulators and pumps shall maintain a pressure capacity reserve at all times to provide for repeated operation of hydraulic preventers. All tests may be conducted using a test plug. Tests shall be recorded by charts, if required by the Supervisor.



## 4.5 13-3/8" Conductor

### 4.5.1 Specific HSE Considerations

None

### 4.5.2 Drilling

The conductor will be installed via auger and grout unless surface conditions dictate driving.

#### 4.5.2.1 Directional Objective

It is imperative that the conductor be placed with as much verticality as reasonably possible to minimize any directional corrections in the surface hole. Driving and/or drilling forces should be managed to maintain verticality.

Hole Size	Action	From		Build /100'	Turn /100'	DLS /100'	To	
		MD/TVD	INC/AZ				MD/TVD	INC/AZ
17 1/2"	Hold	22'	0°/0°	0°	0°	0°	120'	0°/0°

### 4.5.3 Casing

Set Depth	Top (RTE)	Size	Weight	Grade	Burst	Collapse	Centralizers
120'	20'	13 3/8"	61#	J-55	3090 psi	1540 psi	NO

## 4.6 10-5/8" Surface Hole

### 4.6.1 Specific HSE Considerations

This hole interval will penetrate all usable water zones. Based on regional activity, there is a minimal risk of shallow formation instability in the surface hole. In the event that such instability occurs, and cannot be managed within 12 hrs, the surface hole will be enlarged to 12 1/4" and a 10 3/4" contingency string will be set. This contingency MUST be reviewed and approved by Alta Mesa Engineering and the IDL supervisor.

### 4.6.2 Drilling

#### 4.6.2.1 Directional Objective

The surface hole will be drilled to 850' MD/TVD with no inclination. Drilling WOB will be managed to maintain verticality throughout the section and to optimize ROP without inducing shock & vibration. Surveys will be obtained using gyro Multi-shot.

Hole Size	Action	From		Build /100'	Turn /100'	DLS /100'	To	
		MD/TVD	INC/AZ				MD/TVD	INC/AZ
10-5/8"	Hold	120'	0°/0°	0°	0°	0.0°	850'	0°/0°

#### 4.6.2.2 Bottom Hole Assembly

The surface hole will be drilled with a 10-5/8" milled tooth bit and the bottom hole assembly as specified below.

Length	Cumulative	Connection		OD in	ID in	lb/ft	S.R.
to surface		4-1/2" D P 16 60# - G105 - Class II	TOP Box 4-1/2 XH * BTM Pin 4-1/2 XH	4.366	3.625	16.60	3.18
180.0 ft	416.0 ft	4-1/2" HWDP 42 00# - Range 3	TOP Box 4 F * BTM Pin 4 F	5.000	3.000	50.00	2.44
4.0 ft	226.0 ft	Xover - OD 6.50"	TOP Box 4 F * BTM Pin 5-1/2 REG	6.500	2.613	91.55	1.26
60.0 ft	232.0 ft	7" D.C.	TOP Box 5-1/2 REG * BTM Pin 5-1/2 REG	7.000	2.613	109.66	1.50
4.0 ft	172.0 ft	Xover - OD 8.00"	TOP Box 5-1/2 REG * BTM Pin 6-5/8 REG	8.000	3.000	147.02	1.00
60.0 ft	168.0 ft	8" D.C.	TOP Box 6-5/8 REG * BTM Pin 6-5/8 REG	8.000	2.613	149.64	1.10
8.0 ft	106.0 ft	8-1/4" Stab - Blade 12 125"	TOP Box 6-5/8 REG * BTM Pin 6-5/8 REG	8.250	2.613	161.00	1.10
30.0 ft	102.0 ft	8" D.C.	TOP Box 6-5/8 REG * BTM Pin 6-5/8 REG	8.000	2.613	149.64	1.10
6.0 ft	72.0 ft	8-1/4" Stab - Blade 12 125"	TOP Box 6-5/8 REG * BTM Pin 6-5/8 REG	8.250	2.613	161.00	1.10
60.0 ft	66.0 ft	8" D.C.	TOP Box 6-5/8 REG * BTM Pin 6-5/8 REG	8.000	3.000	147.02	1.00
5.0 ft	6.0 ft	Bit Sub - OD 8.00"	TOP Box 6-5/8 REG * BTM Box 6-5/8 REG	8.000	3.000	147.00	
1.0 ft		Milled Tooth GTX-1 10.625 in	TOP Pin 6-5/8 REG	Well: SmokeRanchLLLP 1-21 String: No Name			

#### 4.6.2.3 Mud System

The surface hole will be drilled using spud mud. Additives will be included for inhibition and also to build high-vis sweeps as necessary.

Measured Depth, ft	Mud Density, ppg	Funnel Viscosity, cP	Yield Point, lb/100ft <sup>2</sup>	API Fluid Loss, ml	pH	LGS %
110 - 850'	8.6	25-36	8-12	N/C	7.0-8.0	4 - 7

#### 4.6.2.4 Torque & Drag

Vertical through this interval. Monitor PU & SO weight to ensure good hole cleaning.

#### 4.6.3 Open Hole Evaluation

No open-hole evaluation will be conducted in this interval

#### 4.6.4 Casing

The surface casing is to be set at a depth that isolates problematic formations and usable water strata. Special drift is required.

Set Depth	Top (RTE)	Size	Weight	Grade	Conn	Drift	Burst	Collapse	Tension
850'	20'	8 5/8"	32.0#	K-55	LTC	7.875"	3930 psi	2530 psi	503 kips

#### 4.6.4.1 Shoe Track

1. Washdown guide shoe – thread locked
2. Single Casing joint – thread locked
3. Float Collar – thread locked
4. Joints to surface

#### 4.6.4.2 Centralizers

- Type: Bow Spring
- Placement: One each, first four joints. One every third joint to surface.

#### 4.6.5 Cementing Operations

##### Displacement

Volume from Surface to Landing Collar : 46.9 bbl

##### Static Fluid Pressure at End of Job

Inside Pressure : 406 psi  
Annulus Pressure : 579 psi  
Final Differential Pressure : 173 psi

##### Pumping Schedule

Spacer1	4.00 mn	20.0 bbl	@	0.00 ft
Spacer2	4.00 mn	20.0 bbl	@	0.00 ft
Btm Plug	2.00 mn			
Tail Slurry	7.11 mn	35.5 bbl	@	20.00 ft
Top Plug	2.00 mn			
Mud	6.14 mn	43.0 bbl	@	0.00 ft

Slow Displacement 7.72 mn 3.9 bbl @ 0.00 ft  
TOTAL PUMPING TIME 33 mn

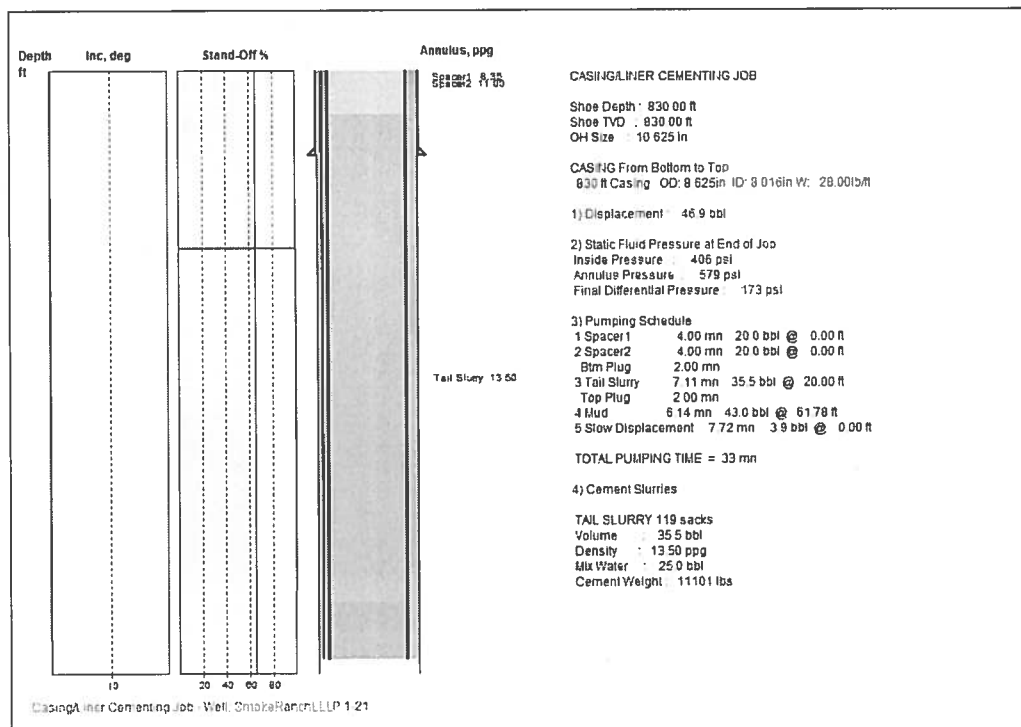
**Cement Slurries**

TAIL SLURRY: 119 sacks  
Volume : 35.5 bbl  
Density : 13.50 ppg  
Mix Water : 25.0 bbl  
Cement Weight : 11101 lbs

**Free Fall Analysis**

Maximum Pumping Rate : 7.0 bbl  
Maximum Return Rate : 9.3 bbl  
Max Injection Pressure : 257 psi

Depth of Interest : 829.90 ft  
TVD of Interest : 829.90 ft  
Maximum Pressure : 601 psi  
Maximum EMW : 13.96 ppg  
Minimum Pressure : 390 psi  
Minimum EMW : 9.05 ppg



#### 4.7 7-7/8" Production Hole

Upon drilling out of the 8 5/8" casing, the 7-7/8" hole will be drilled vertically to ~900', then kicked to the northeast and dropped back to vertical @ ~4,200'.

##### 4.7.1 Specific HSE Considerations

This hole section will be drilled through hydrocarbon bearing formations. Any fluid containing oily cuttings and the contaminated cuttings are to be managed appropriately to maintain a safe working area and prevent environmental damage.


##### 4.7.2 Drilling

###### 4.7.2.1 Directional Objective

Hole Size	Action	From		Build /100'	Turn /100'	DLS /100'	To	
		MD/TVD	INC/AZ				MD/TVD	INC/AZ
7-7/8"	Hold	850'	0°/0°	0°	0°	0°	900'	0°/0°
	Build	900'	0°/0°	3.0°	0°	2.5°	1377'/1372'	13.71°/30.79°
	Hold	1377'/1372'	13.71°/30.79°	0°	0°	0°	3842'/3767'	13.71°/30.79°
	Drop	3842'/3767'	13.71°/30.79°	-3.0°	0°	2.5°	4299'/4220'	0°/0°
	Hold	4299'/4220'	0°/0°	0°	0°	0°	5899'/5820'	0°/0°

###### 4.7.2.2 Bottom Hole Assembly

The BHA will be managed over the production interval to address significant formation changes and formation evaluation requirements. The BHA is representative, where the bit and specific collar arrangement may vary.

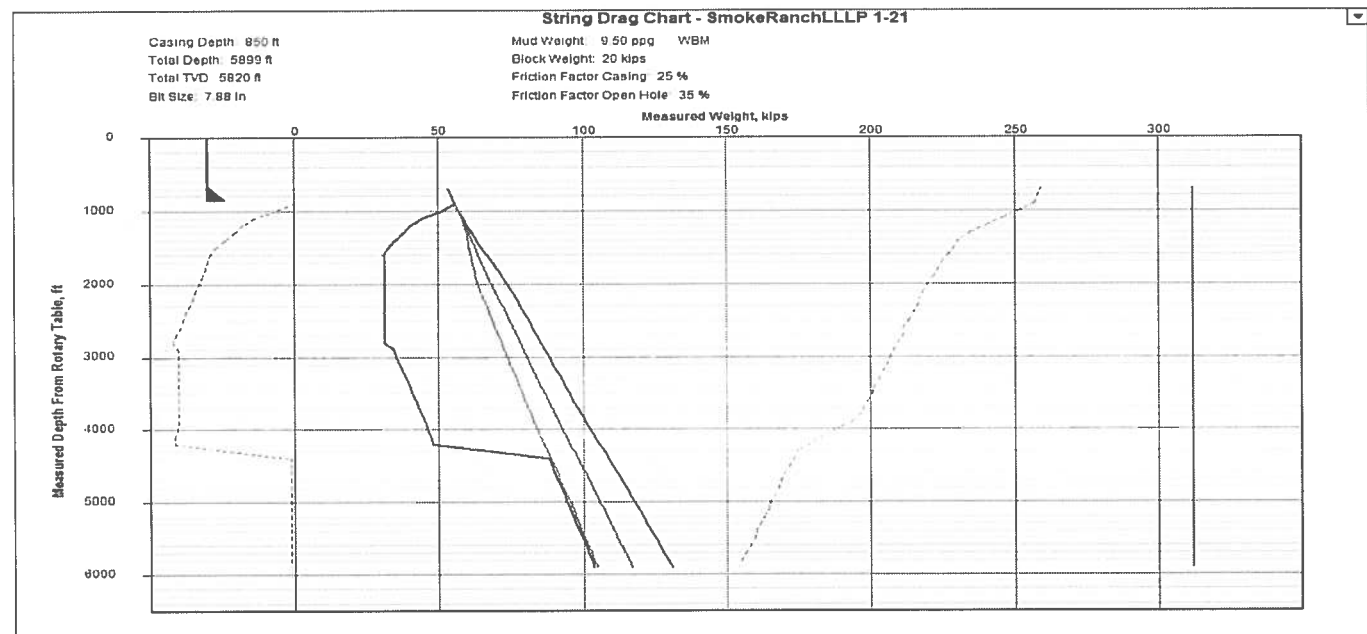
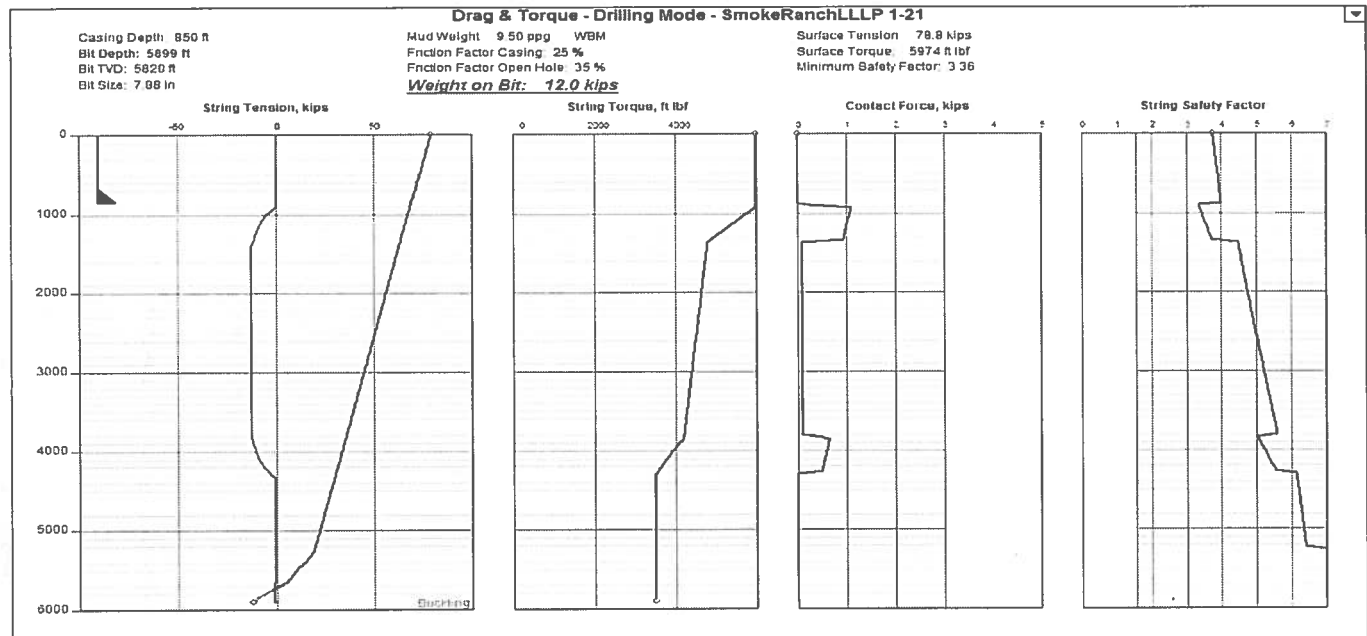
Length	Cumul		Connection	OD in	ID in	lb/ft	S.R.
to surface							
186.0 ft	644.4 ft			4.366	3.825	16.60	2.29
18.8 ft	456.4 ft			4.500	2.750	42.00	2.70
186.0 ft	439.6 ft			6.000	2.250	96.00	2.70
5.0 ft	253.6 ft			4.500	2.750	42.00	3.38
155.0 ft	248.6 ft			6.500	2.813	91.85	1.00
30.0 ft	93.6 ft			6.500	2.813	91.85	1.10
4.0 ft	63.6 ft			6.250	2.250	90.51	1.13
3.0 ft	59.6 ft			6.000	2.250	82.50	1.25
27.0 ft	56.6 ft			6.500	2.813	91.85	1.12
4.7 ft	29.6 ft			6.750	3.000	37.04	1.33
3.0 ft	24.3 ft			6.750	4.900	85.10	1.28
21.0 ft	21.9 ft			6.750	3.500	89.15	1.28
0.9 ft				6.750	4.894	80.00	
PDC MKFS8 7.875 in				TOP Pin 4-1/2 REG			
				Well: SmokeRanchLLLP 1-21 String: No Name			

#### 4.7.2.3 Mud System

See mud program for specific recommendations.

#### 4.7.2.4 Torque & Drag

Below are the T&D charts for Rotary Drilling at total depth and Tripping.





#### 4.7.3 Logging Program

While Drilling: Mud logging only

Coring: None

Wireline: After reaching TD, and conditioning the hole, wireline evaluation will be conducted as follows:

- Spontaneous Potential
- Gamma Ray
- Propagation Resistivity
- Density
- Neutron Porosity
- Electron Capture Spectroscopy

#### 4.7.4 Production Casing

The production casing string is designed with varying grades to accommodate H<sub>2</sub>S production and salt creep. Below is the primary casing design and the contingency design with HCP-110 for salt intervals.

Set Depth	Top (RTE)	Size	Weight	Grade	Conn	Drift	Burst	Collapse	Tension
5,899	20'	5 1/2"	15.5#	K-55	LTC	4.825"	4810 psi	4040 psi	248 kips

##### 4.7.4.1 Shoe Track

5. Washdown float shoe – thread locked
6. Double Casing joint – thread locked
7. Float Collar – thread locked
8. Joints to surface

##### 4.7.4.2 Centralizers

- Type: Bow Spring
- Placement: One each, first four joints. One every third joint to TOC

#### 4.7.5 Cementing Operations

##### *Displacement*

Volume from Surface to Landing Collar : 137.4 bbl

##### *Static Fluid Pressure at End of Job*

Inside Pressure : 2874 psi  
Annulus Pressure : 4128 psi  
Final Differential Pressure : 1254 psi

##### *Pumping Schedule*

Spacer1	5.60 mn	20.0 bbl	@	0.00 ft
Spacer2	5.60 mn	20.0 bbl	@	0.00 ft
Btm Plug	2.00 mn			
Lead Slurry	27.00 mn	108.0 bbl	@	500.00 ft

Tail Slurry	14.76 mn	59.0 bbl	@ 4000.00 ft
Top Plug	2.00 mn		
Mud	22.50 mn	135.0 bbl	@ 0.00 ft
Slow Displacement	4.77 mn	2.4 bbl	@ 0.00 ft
TOTAL PUMPING TIME	84 mn		

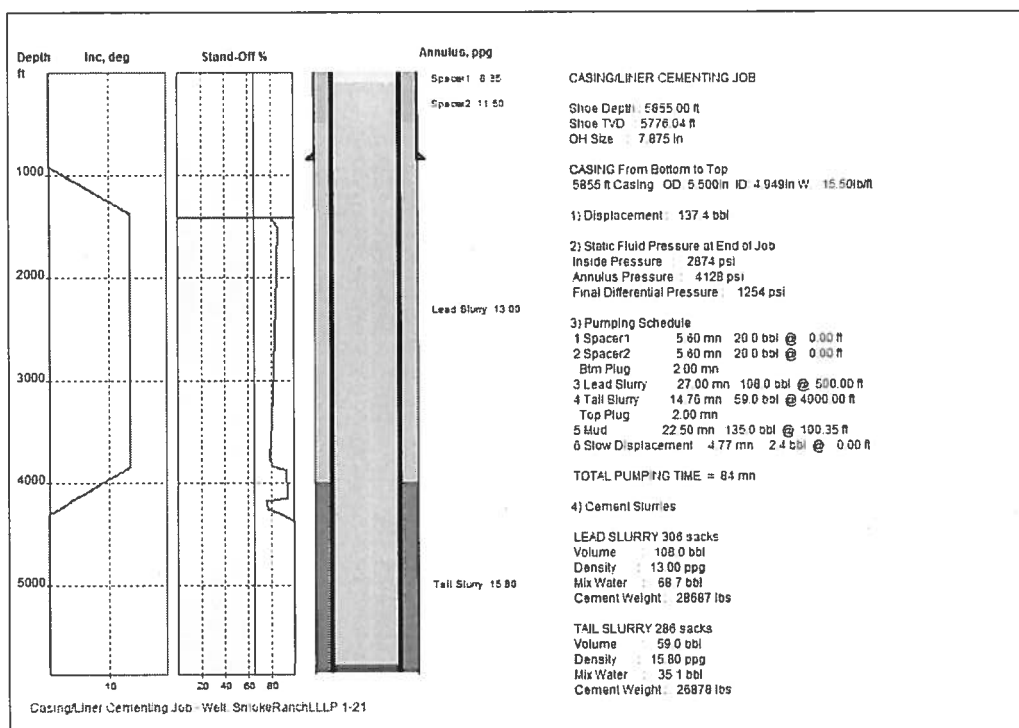
#### Cement Slurries

LEAD SLURRY: 306 sacks  
 Volume : 108.0 bbl  
 Density : 13.00 ppg  
 Mix Water : 68.7 bbl  
 Cement Weight : 28687 lbs  
 TAIL SLURRY: 286 sacks  
 Volume : 59.0 bbl  
 Density : 15.80 ppg  
 Mix Water : 35.1 bbl  
 Cement Weight : 26878 lbs

#### Free Fall Analysis

Maximum Pumping Rate : 6.0 bbl  
 Maximum Return Rate : 6.5 bbl  
 Max Injection Pressure : 1688 psi

Depth of Interest : 5854.90 ft  
 TVD of Interest : 5775.94 ft  
 Maximum Pressure : 4224 psi  
 Maximum EMW : 14.09 ppg  
 Minimum Pressure : 2879 psi  
 Minimum EMW : 9.60 ppg



## **5 Completion**

Method of completion will be determined subsequent to review of open-hole log data and cased hole cement bond logs (CBL).

## 6 Well Head – Design Criteria

At this time wellhead proposals are pending, but those proposals are being developed according to the following design criteria.

- Working Conditions:
  - 0ppm H<sub>2</sub>S
  - 0% CO<sub>2</sub>
  - 5,000#
  - PSL1
  - AA
  - Temperature Class U (0-250 F)
  - Base Plate on A-Section
- Casing Program:
  - 13 3/8" Conductor
  - 8 5/8" Surface Pipe
  - 5 1/2" Production String
- Contingency:
  - In the area there have been instances of unconsolidated sands causing problems in the surface hole, where the most effective solution is opening up to 12 1/4" and setting a short string of 10 3/4" Surface Pipe, followed by the 8 5/8" and 5 1/2" strings at the planned depths. Need proposal for base case and contingency.
- BOP:
  - 11"x5M Cameron Type U
- Consideration:
  - Would like to minimize improve NU speed and minimize need for cutting and welding. A speed head would be desirable.

## **7 Reclamation**

This well site is located in a pasture with negligible relief. Reclamation of the site will be addressed according to the Surface use Agreement signed with the landowner per IDAPA 20.07.02 Section 325.08

